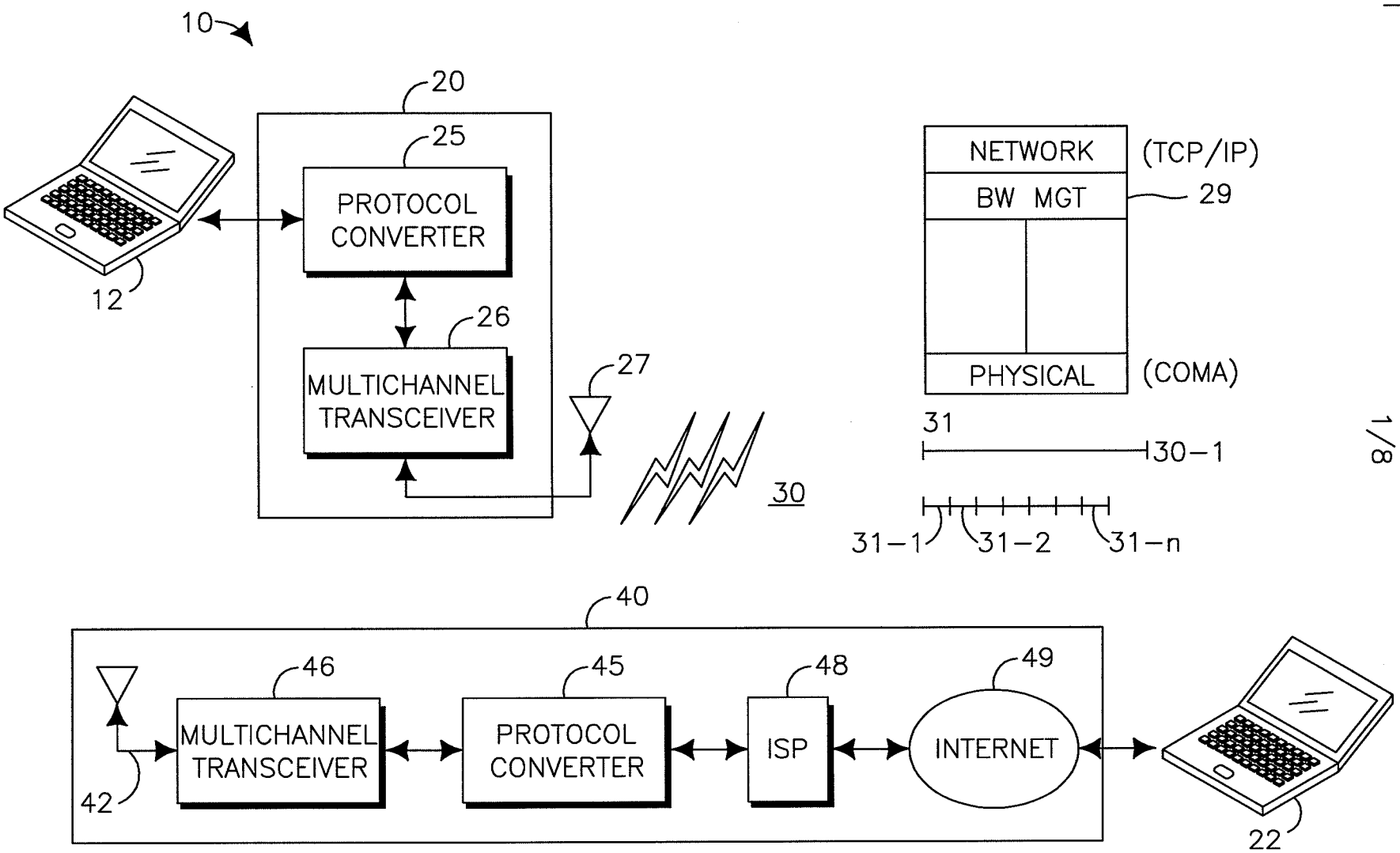

FIG. 1

Replacement Sheets
1/8

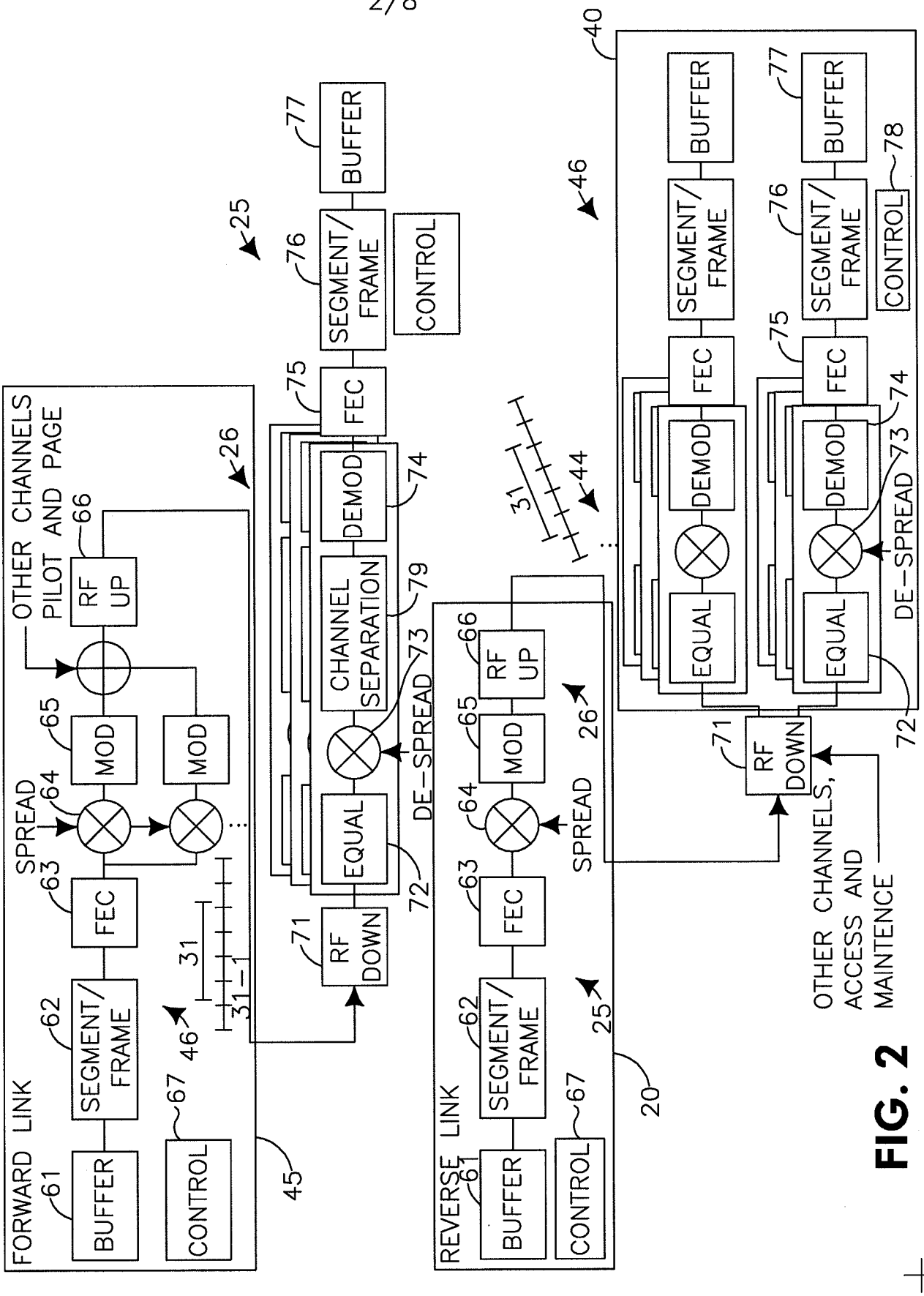
FORWARD LINK
REVERSE LINK
BUFFER
SEGMENT/FRAME
FEC
MOD
RF UP
CONTROL
SPREAD
OTHER CHANNELS PILOT AND PAGE
RF DOWN
EQUAL
CHANNEL SEPARATION
DEMOD
DE-SPREAD
OTHER CHANNELS, ACCESS AND MAINTENCE
20
25
26
40
44
45
46
61
62
63
64
65
66
67
71
72
73
74
75
76
77
78
79

FIG. 2

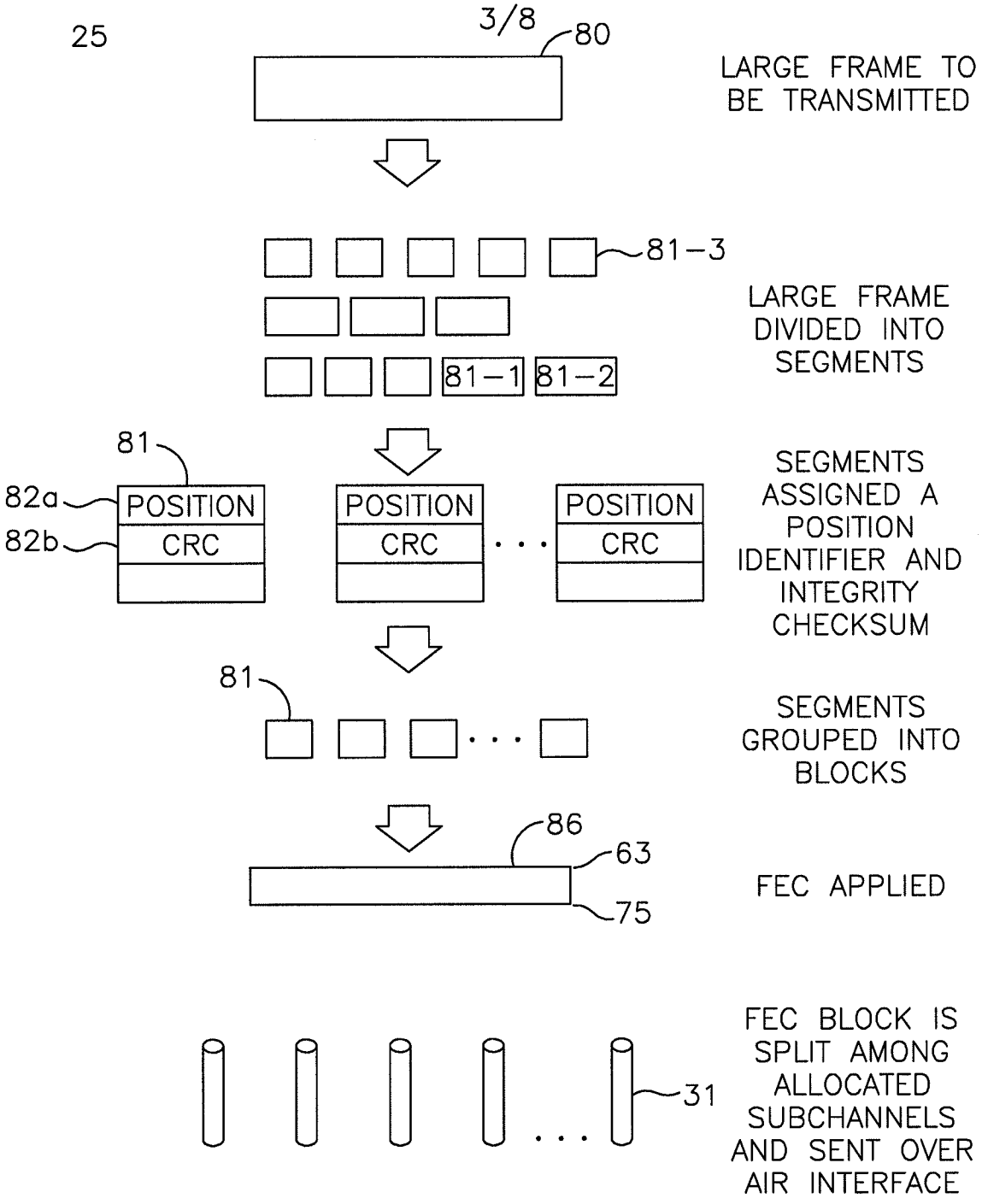
25
80
LARGE FRAME TO BE TRANSMITTED
81-3
81-1
81-2
LARGE FRAME DIVIDED INTO SEGMENTS
81
82a
82b
POSITION
CRC
SEGMENTS ASSIGNED A POSITION IDENTIFIER AND INTEGRITY CHECKSUM
SEGMENTS GROUPED INTO BLOCKS
86
63
75
FEC APPLIED
31
FEC BLOCK IS SPLIT AMONG ALLOCATED SUBCHANNELS AND SENT OVER AIR INTERFACE

FIG. 3

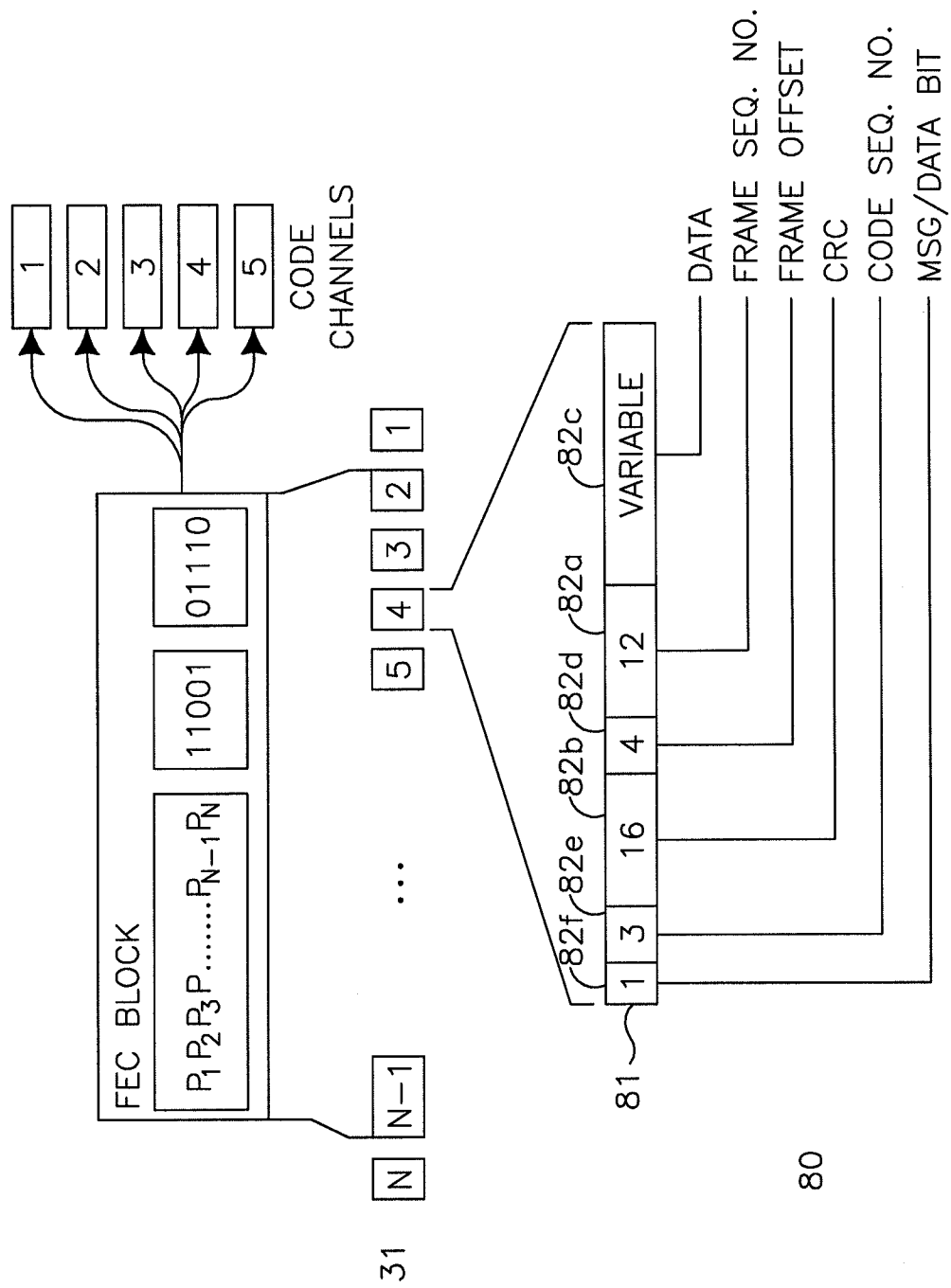
FEC BLOCK
$P_1P_2P_3P.....R_{N-1}R_N$
11001
01110
1
2
3
4
5
CODE CHANNELS
N
N−1
...
5
4
3
2
1
31
81
1
3
16
4
12
VARIABLE
82f
82e
82b
82d
82a
82c
DATA
FRAME SEQ. NO.
FRAME OFFSET
CRC
CODE SEQ. NO.
MSG/DATA BIT
80

FIG. 4

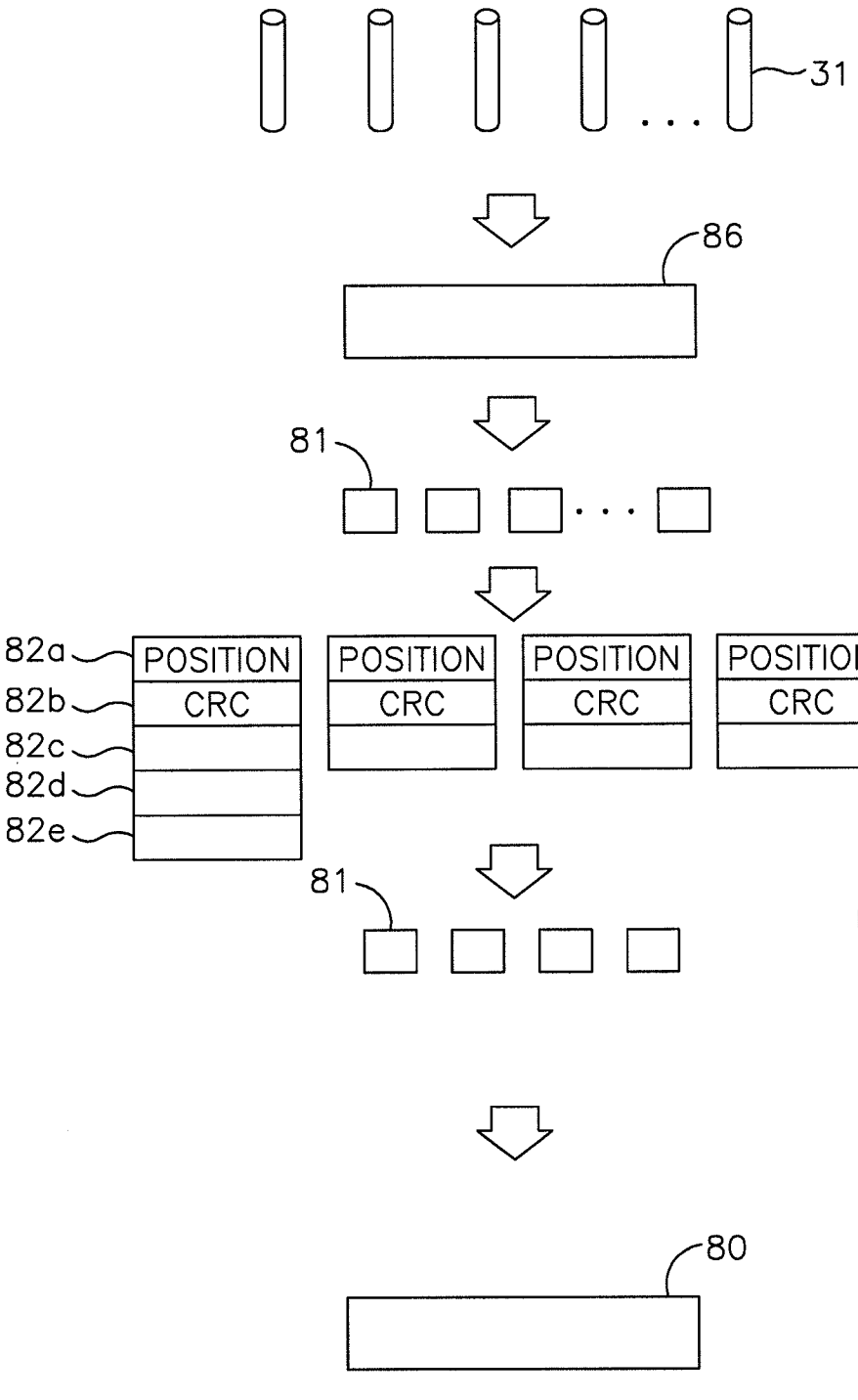
31
86
MULTIPLE DATA BITS INTO FEC BLOCK
81
APPLY FEC ALGORITHM
82a
82b
82c
82d
82e
POSITION
CRC
SPLIT INTO SEGMENTS
81
USE POSITION TO RECONSTRUCT LARGE FRAME
REQUEST RETRANSMISSION OF SEGMENTS INTO BAD CRC
80
ASSEMBLE LARGE FRAME IF PIECE MISSING AT EOF, REQUEST RETRANSMIT OF MISSING SEGMENT
MAINTAIN # SEGMENTS RECEIVED IN ERROR TO DETERMINE OPTIMUM SEGMENT SIZE

FIG. 5

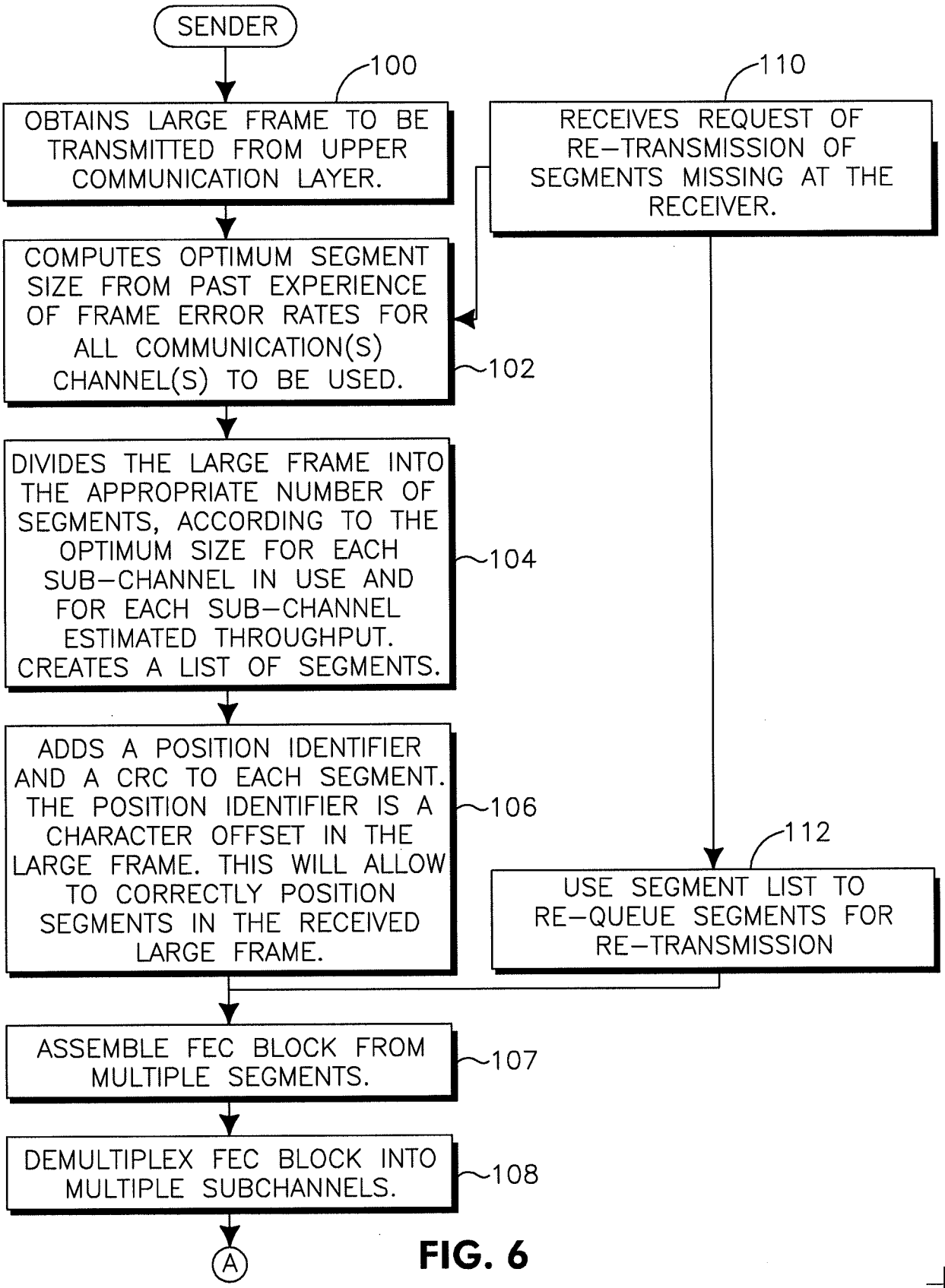
SENDER
100
OBTAINS LARGE FRAME TO BE TRANSMITTED FROM UPPER COMMUNICATION LAYER.
110
RECEIVES REQUEST OF RE-TRANSMISSION OF SEGMENTS MISSING AT THE RECEIVER.
COMPUTES OPTIMUM SEGMENT SIZE FROM PAST EXPERIENCE OF FRAME ERROR RATES FOR ALL COMMUNICATION(S) CHANNEL(S) TO BE USED.
102
DIVIDES THE LARGE FRAME INTO THE APPROPRIATE NUMBER OF SEGMENTS, ACCORDING TO THE OPTIMUM SIZE FOR EACH SUB-CHANNEL IN USE AND FOR EACH SUB-CHANNEL ESTIMATED THROUGHPUT. CREATES A LIST OF SEGMENTS.
104
ADDS A POSITION IDENTIFIER AND A CRC TO EACH SEGMENT. THE POSITION IDENTIFIER IS A CHARACTER OFFSET IN THE LARGE FRAME. THIS WILL ALLOW TO CORRECTLY POSITION SEGMENTS IN THE RECEIVED LARGE FRAME.
106
112
USE SEGMENT LIST TO RE-QUEUE SEGMENTS FOR RE-TRANSMISSION
ASSEMBLE FEC BLOCK FROM MULTIPLE SEGMENTS.
107
DEMULTIPLEX FEC BLOCK INTO MULTIPLE SUBCHANNELS.
108
A

FIG. 6

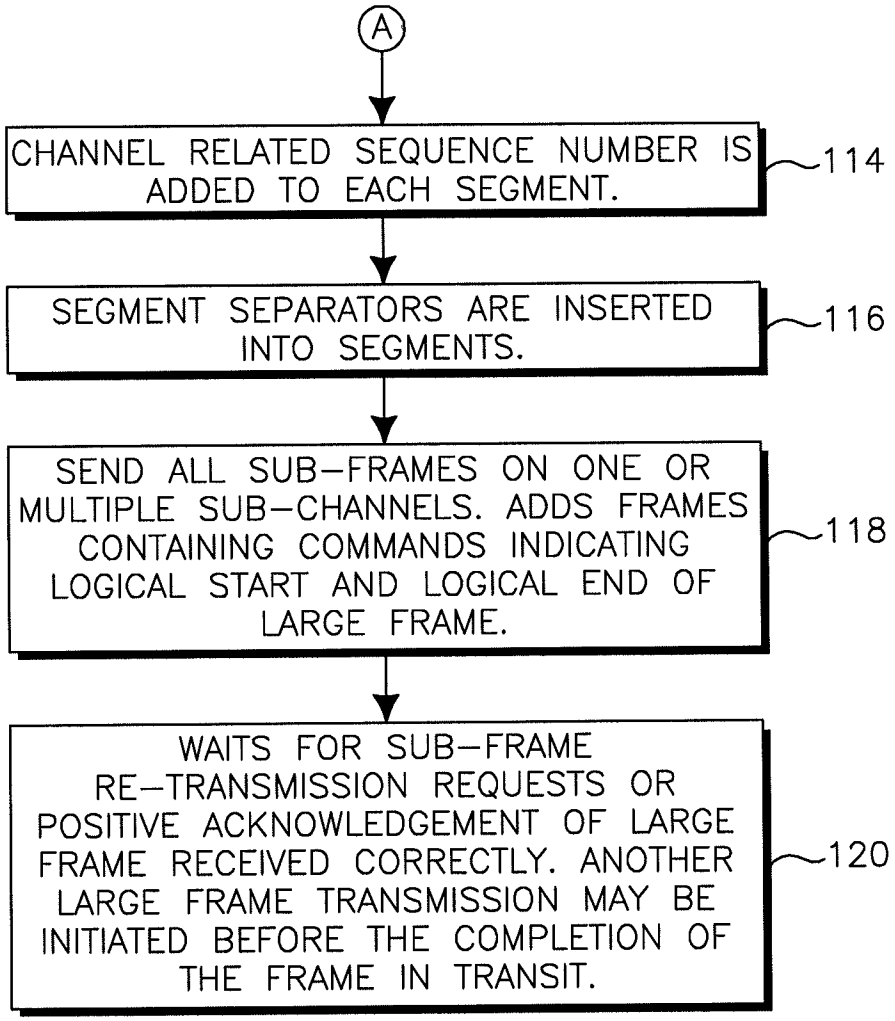
A
CHANNEL RELATED SEQUENCE NUMBER IS ADDED TO EACH SEGMENT.
114
SEGMENT SEPARATORS ARE INSERTED INTO SEGMENTS.
116
SEND ALL SUB-FRAMES ON ONE OR MULTIPLE SUB-CHANNELS. ADDS FRAMES CONTAINING COMMANDS INDICATING LOGICAL START AND LOGICAL END OF LARGE FRAME.
118
WAITS FOR SUB-FRAME RE-TRANSMISSION REQUESTS OR POSITIVE ACKNOWLEDGEMENT OF LARGE FRAME RECEIVED CORRECTLY. ANOTHER LARGE FRAME TRANSMISSION MAY BE INITIATED BEFORE THE COMPLETION OF THE FRAME IN TRANSIT.
120

FIG. 7

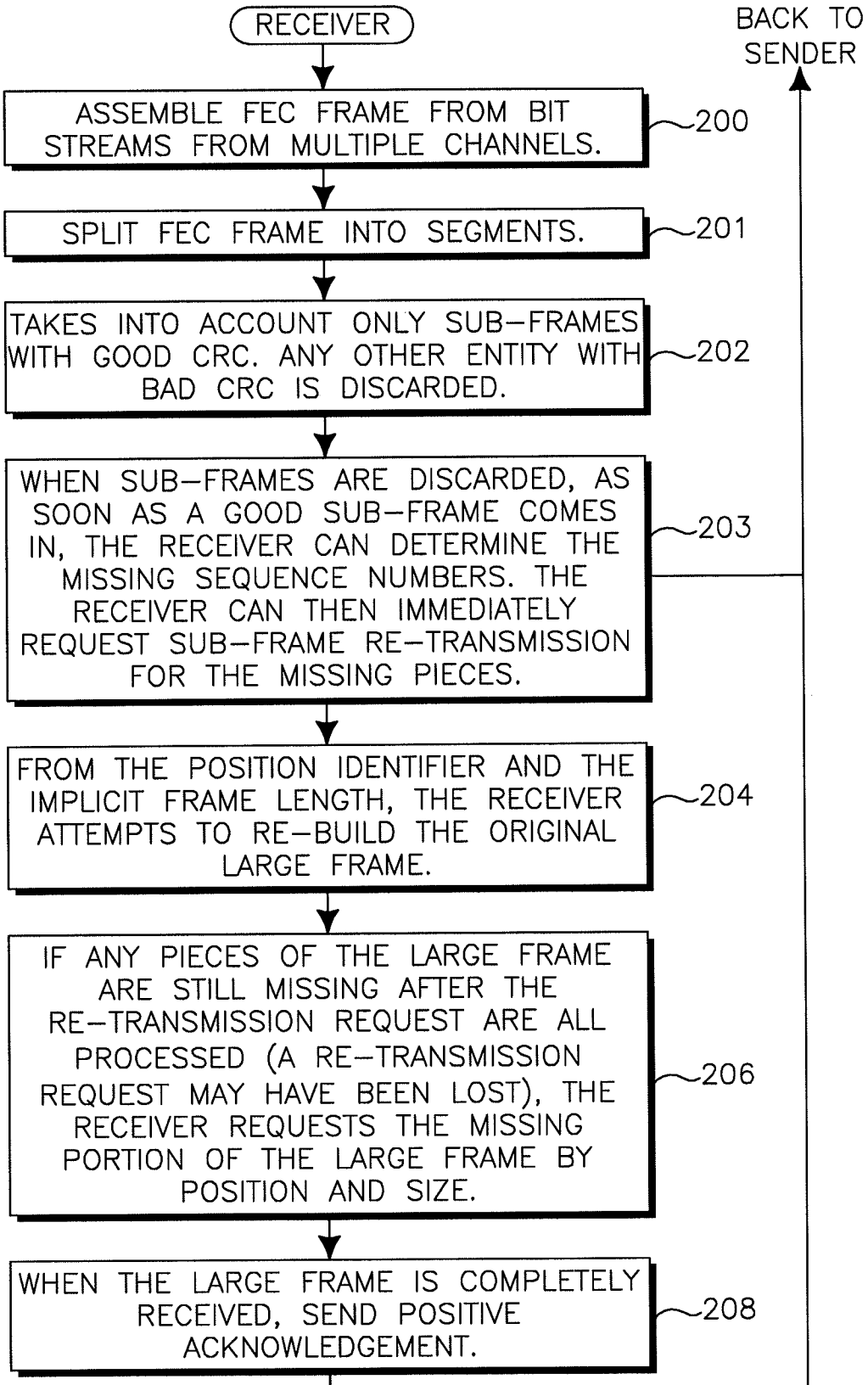
RECEIVER
BACK TO SENDER
ASSEMBLE FEC FRAME FROM BIT STREAMS FROM MULTIPLE CHANNELS.
200
SPLIT FEC FRAME INTO SEGMENTS.
201
TAKES INTO ACCOUNT ONLY SUB-FRAMES WITH GOOD CRC. ANY OTHER ENTITY WITH BAD CRC IS DISCARDED.
202
WHEN SUB-FRAMES ARE DISCARDED, AS SOON AS A GOOD SUB-FRAME COMES IN, THE RECEIVER CAN DETERMINE THE MISSING SEQUENCE NUMBERS. THE RECEIVER CAN THEN IMMEDIATELY REQUEST SUB-FRAME RE-TRANSMISSION FOR THE MISSING PIECES.
203
FROM THE POSITION IDENTIFIER AND THE IMPLICIT FRAME LENGTH, THE RECEIVER ATTEMPTS TO RE-BUILD THE ORIGINAL LARGE FRAME.
204
IF ANY PIECES OF THE LARGE FRAME ARE STILL MISSING AFTER THE RE-TRANSMISSION REQUEST ARE ALL PROCESSED (A RE-TRANSMISSION REQUEST MAY HAVE BEEN LOST), THE RECEIVER REQUESTS THE MISSING PORTION OF THE LARGE FRAME BY POSITION AND SIZE.
206
WHEN THE LARGE FRAME IS COMPLETELY RECEIVED, SEND POSITIVE ACKNOWLEDGEMENT.
208

FIG. 8